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ZOOLOGY.

Allen's Faunal Areas of North America.—In a paper on the Distribution of North American Mammals, Mr. J. A. Allen gives the following tabular synopsis of the faunal areas of North America:

Realms	$\left\{ \begin{array}{l} \text{Arctic.} \\ \text{North Temperate.} \\ \text{American Tropical.} \end{array} \right.$
Regions	$\left\{ \begin{array}{l} \text{North American.} \\ \text{Central American.} \\ \text{Antillean.} \end{array} \right. \leftarrow \text{American Tropical Realm.}$
Subregions	$\left\{ \begin{array}{l} \text{Cold Temperate} \\ \text{Warm Temperate} \end{array} \right\} = \text{North American Region.}$
Provinces	$\left\{ \begin{array}{l} \text{Humid.} \\ \text{Arid.} \end{array} \right\} = \text{Warm Temperate Region.}$
Subprovinces	$\left\{ \begin{array}{l} \text{Appalachian.} \\ \text{Austroriparian.} \\ \text{Campestrian.} \\ \text{Sonoran.} \end{array} \right\} = \text{Humid Province.}$ $\left\{ \begin{array}{l} \text{Campestrian.} \\ \text{Sonoran.} \end{array} \right\} = \text{Arid Province.}$
Districts	$\left\{ \begin{array}{l} \text{Great Plains.} \\ \text{Great Basin.} \\ \text{Pacific Coast.} \end{array} \right\} = \text{Campestrian Subprovince.}$
Faunæ	$\left\{ \begin{array}{l} \text{Barren Ground.} \\ \text{Alaskan-Arctic.} \end{array} \right\} \text{Arctic.}$ $\left\{ \begin{array}{l} \text{Aleutian.} \\ \text{Hudsonian.} \\ \text{Canadian.} \\ \text{Sitkan.} \end{array} \right\} \text{Cold Temperate.}$ $\left\{ \begin{array}{l} \text{Alleghanian.} \\ \text{Carolinian.} \\ \text{Louisianian.} \end{array} \right\} \text{Humid Warm Temperate.}$ $\left\{ \begin{array}{l} \text{Floridian.} \\ \text{Tamaulipan.} \end{array} \right\} \text{Tropical.}$

(Bull. Am. Mus. Nat. Hist., Dec., 1892.)

The Madagascar Fauna.—At a recent meeting of the Royal Geographical Society, Canon Tristram made the following remarks on the Fauna of Madagascar:

"Madagascar has an extraordinary natural history. One would suppose, from its position, that this would be African, but it, like its people, is thoroughly un-African. The monkeys and lemurs of Madagascar are not to be found in Africa, while all the great African animals of prey are absent. Among the lemurs is one known as the ayeaye, the formation of whose digits is unique. The botany is almost as peculiar.

"We saw, at the last meeting of the Zoological Society, a specimen of the egg of an extinct bird of Madagascar, which is fifteen times the bulk of an ostrich egg, and yet the bird itself does not appear to have been larger than—as far as we can judge from remains—the New Zealand moa, an extinct bird, to which it had an affinity. This same peculiarity runs through all the birds of Madagascar. Of course, the water-birds and sea-fowl are the same as those of Africa, but there are one or two extraordinary exceptions. There is the snake-bird, a long-necked bird of very great beauty and grace, allied to the cormorant, which it resembles in its habits, and of which there are four species in the world—the Madagascar one is certainly Indian. Then, again, another puzzling bird to naturalists is the *Mesites*, a water-hen peculiar to Madagascar. These birds are usually distinguished by a small tail and a short tarsus, whereas, the Madagascar, which is related to the others, has a long tail and tarsus, and no one, until M. Audebert, thought the bird was allied to the rails. There is a group of cuckoos entirely peculiar to Madagascar—the coua—of which there are nine or ten species, which have no relations at all in Africa or India. Then, in another group, we have a bird allied to the thrushes, but not African, although allied to a species in the Mauritius and all the Mascarene Islands—the *Hypsipetes*. Altogether, we cannot explain the Madagascar Fauna, but it shows that Madagascar must have been separated from Africa for an infinity of ages; and its natural history affinities are certainly rather with India than Africa, and yet they are entirely distinct and peculiar. No doubt there is a great deal more to be found out than we have yet obtained. The most peculiar specimens seem to come from the northwest part, which, I believe, has been but slightly explored. We know less of it than of any other part, and that leads one to hope that we may still have further specimens, and that we may get something which will throw light generally on the Madagascar fauna, which is represented also in the Seychelles Islands, in the Rodrigues, and in Réunion, also in the Mauritius." (Proceeds. Roy. Geog. Soc., Nov., 1892.)

The Nephridia of Amphioxus.—Boveri, in an article¹ which deserves more space than we can give it, describes the nephridia of *Amphioxus*, and, in conclusion, summarises his results in the following words: There are present in *Amphioxus* all the elements of the nephridial system of the Craniata, part with the same function (pro-nephric tubules), part in combination with other functions (peribranchial

¹Zool. Jahrbücher. Abth. f. Anat. u. Ontog. V., 1892.

chamber=pronephric duct), part in wholly other associations (genital chamber=mesonephric tubules). As in the whole of the rest of its organization, *Amphioxus*, in its urogenital system, shows in contrast with the Craniata, a condition of simplicity and indifference, which is recapitulated by the latter in their ontogeny.

These facts show that we may recognize the conditions of the excretory and sexual apparatus of *Amphioxus* as primitive from which the relations found in the Craniata have probably developed. *Amphioxus* is therefore to be taken from its former isolated position, and it shows itself to be, as in all its other organs, so with reference to its urogenital system actually as the primitive type of the vertebrates, as the true primitive vertebrate.

The Position of the Marsipobranchs.—Prof. G. B. Howes has reviewed² the various conflicting views as to the systematic position and affinities of the lampreys and hag-fishes, and reconsiders the various structural points of value in that connection. He points out that these forms must be regarded as aberrant gnathostomata; that their urogenital apparatus with that of the Teleosts is the least modified survival of an hermaphroditic apparatus possessed by the ancestors of the vertebrates; that the sucking mouth of these forms has been secondarily acquired, and is not genitically connected with that of the batrachian larva. The arguments from the hypophysis are also considered and assigned great weight, and the rasping tongue is given a greater value in uniting the lampreys and myxinoids than is the sucking mouth. As a result, dismissing, as shown above the term Agnatha for these forms, Howes divides the Vertebrata proper into Epicraniata and Hypocraniata, basing the division upon the position of the hypophysis; the Epicraniata containing only the Marsipobranchs. He has also a secondary division into Euthorchidic and Nephrochidic series—the lampreys, Teleosts and Dipnoi belonging to the former; all other vertebrates (except, possibly, some ganoids) belonging to the latter series. He thinks that Haeckel's famous aphorism that the Marsipobranchs "are further removed from the fishes than the fishes are from man," fails to express the enormity of the gap between these forms and the higher vertebrates.

Degeneration of the Clitoris.—In a paper read before the American Association of Obstetricians and Gynecologists at the St. Louis, N. W., meeting in 1892, Dr. Robert T. Morris stated that about 80 per cent. of all Aryan American women have adhesions which bind

² Trans. Biol. Socy. Liverpool, VI, 1892.

together the glans of the clitoris and its prepuce. These adhesions may bind down the prepuce so closely that not a particle of the glans clitoridis is in sight. They may involve half of the glans, or they may form only a small band. Adhesions which involve the whole, or a large part of the glans clitoridis cause profound disturbances in the physical and mental health of the individual, and probably form the most common single factor in invalidism in young women.

In compiling statistics upon the subject, Dr. Morris found that preputial adhesions are rare among negroes, and seem to occur only in those possessing a large admixture of white blood.

The author considers the degenerate clitoris a characteristic of the civilized white race. (Am. Journ. of Obstetrics, Vol. xxvi, 1892.)

Zoological News—Reptiles.—Professor O. P. Hay has a valuable paper³ on the breeding habits, eggs, and young of certain snakes, to which reference must be made by all who wish information on this subject. The same author also notes⁴ the ejection of blood from the eyes of the horned toad. The same habit on the part of *Phrynosoma* has been noted by other observers, but Professor Hay has settled, by microscopic examination, the fact that it is really blood which is squirted out from the outer canthus of the eye.

Dr. Oppel, of Freiburg, i.B., deals⁵ with the fertilization of the Reptilian Egg. His observations were made upon *Anguis fragilis*, *Tropidonotus natrix* and *Lacerta viridis*. The article deals with the behavior of the male and female pronuclei and the accessory sperm nucleus, the questions relating to the latter being still left open.

Dr. H. K. Corning, of Prague, deals with some points in the development of the vertebræ and the myotomic cœlom in *Anguis* and *Tropidonotus*⁶. The myotomic cœlom persists until after the formation of the neural arches of the vertebræ, hence it is easy to see that the segmentation of the vertebræ results from the formation of inter-vertebral splittings which correspond in position to the divisions between the primitive myotomes. The whole question of resegmentation of the vertebral column is not, says Corning, so simple as has been thought.

The subject of Variation in the snakes of North America, treated of by Cope in a late paper,⁷ is taken up by Hay, in his Presi-

³Proc. U. S. Nat. Mus. XV., 385, 1892; cf. Proc. Ind. Acad. Sci., 1891, p. 109, 1892.

⁴L.c., p. 375.

⁵Archiv. f. mikr. Anat. xxxix., 215., 1892.

⁶Morph. Jahrbuch., xvii., p. 611, 1892.

⁷Proc. U. S. Nat. Mus., xiv., 589, 1892.

dential address before the Indiana Academy of Science,⁸ where he finds in four species of snakes that in *Eutaenia sirtalis* the variation from the average number of body vertebræ amounts to 14 per cent., in *Bascanion constrictor* to 6 per cent., in *Cyclophis vernalis* to 4.5 per cent., and in *Diadophis punctatus* to 13 per cent. In the caudal vertebræ the variations amount to 35, 20, 23, and 23.5 per cent. respectively, while in proportion of tail to body the per cents are 9.4, 28, 25, and 35. Hay states that were breeders interested, they could very soon produce breeds of snakes with long bodies and short tails, and short bodies and long tails, or any other combinations that might be desired. The same author has also some interesting notes⁹ upon the systematic names and the habits of the species of *Malaclemys*.

A. J. Bigney notes¹⁰ the occurrence of *Elaps fulvus* in Ripley County (south eastern) Indiana.

Some observations on the growth of the rattle of the rattlesnake are given by Dr. Feokistow, who studied specimens sent him from America. He finds¹¹ that the rattle is frequently shed, and (his snakes were kept in a very warm room) in three or four months two rattles were present, and that their formation has nothing to do with ecdysis. The snakes were made to register the vibrations of the rattle on smoked paper, and it was found that the vibration was a compound one, consisting of the vibration of the tail as a whole, and of the rattle independently of the tail vibrations. The approximate figures of vibrations are given for the tail seventy-five, of the rattle one hundred and ten per "minute."

Mr. W. E. Taylor has published a paper on the Snakes of Nebraska, giving descriptions of both the adult and the young of every species found in Nebraska, together with remarks upon their habits and peculiarities. (Rept. State Board Agric., 1891.)

At the November meeting of the London Zoological Society, Dr. Gunther read a paper descriptive of a collection of reptiles and Batrachians from Nyassa land, transmitted by Mr. Johnston, containing examples of several remarkable new species, amongst which were three new Chameleons, proposed to be called *Chameleon isabellinus*, *Rhampholeon platyceps*, and *R. brachyurus*. (Nature, Nov. 17, 1892.)

⁸Proc. Ind. Acad., 1891, p. 37.

⁹Proc. U. S. Nat. Mus. xv., 1892. Cf. Proc. Ind. Acad. Sci., 1891.

¹⁰Proc. Ind. Acad. Sci., 1891, p. 151, 1892.

¹¹Mélanges Biolog. Acad. Imp. St. Petersburg, xiii. Translated in Annals and Mag. Nat. Hist. vi, xi, 54, 1893.

Batrachia—Mr. Stejneger reports a blind Salamander from Rock House Cave, Missouri. This is one of the most interesting herpetological events of recent years, since it is the first and only blind form among the true salamanders. Mr. Stejneger considers it a new genus of the family Desmognathidæ, and gives a preliminary description of it under the name *Typhlotriton spelæus*, in the Proceeds. U. S. Natl. Mus., Vol. XV.